

DCoE August 2013 Webinar
Traumatic Brain Injury 101: Screening and Assessment Methodology

And thank you for standing by. At this time, all participants are in a listen only mode. During the Question and Answer session, please press star one on your touchtone phone. Today's conference is being recorded. If you have any objections, you may disconnect at this time. Now I will turn the meeting over to Lieutenant Commander Kathleen Shields. You may begin.

Thank you, ma'am. Good afternoon, and thank you for joining us today for our August webinar. My name is Lieutenant Commander Kathleen Shields. I am the Acting Director for the Division of Education and the Multi-Media Education Material Office Team for the Defense and Veterans Brain Injury Center, or DVBIC. I will be your moderator for today's webinar.

Before we begin, let's review some webinar details. Live closed captioning is available through Federal Relay Conference Captioning. Please see the pods beneath the presentation slides. Today's webinar is hosted using the Adobe Connect and Defense Connect Online platforms. Should you experience technical difficulties, please visit dcoe.health.mil/webinars to access troubleshooting tips. There may be an audio delay as we advance the slides in this presentation. Please be patient as the connection catches up with the speaker's comments.

During the webinar, you are welcome to submit technical or content-related questions via the Question Box. The Question Box is monitored, and questions are forwarded to our presenter for response during the Question and Answer session held during the last half hour of the webinar. Our presenter and I will respond to as many questions as time permits.

DCoE's awarding of Continuing Ed, or CE, credit is limited in scope to healthcare providers who actively provide psychological help and traumatic brain injury care to active duty U.S. service members, reservists, National Guardsmen, military veterans, and/or their families. To qualify for the receipt of CE credits from the St. Louis University, you had to register prior to Monday, August 12, 2013 at 11:59 p.m. Eastern time. The authority for training of contractors is at the discretion of the Chief Contracting Official. Currently only those contractors with scope of work or with commensurate contract language are permitted in this training. This webinar is approved for the following CE credits: 1.5 AMA PRA Category One credits, 1.75 CE contact hours Physical Therapy and Occupational Therapy, 1.5 nursing contact hours, 1.5 social work CE hours, 1.5 APA credits for psychologists. For complete accreditation statements, visit dcoe.health.mil/webinars. If you meet the eligibility requirements and have preregistered on or before Monday, August 12, 2013, at 11:59 p.m. Eastern time, please visit conf.swankhealth.com/dcoe at the conclusion of the webinar to complete the online CE evaluation and download your CE certificate. The Swank Healthcare website will open immediately following the webinar and remain open through Thursday, August 22, 2013, at 11:59 p.m. Eastern time. If you did not preregister, you will not be able to receive CE credit or a certificate of attendance for this event.

I will now move on to today's webinar topic, TBI 101: Screening and Assessment Methodology. Traumatic brain injury or TBI occurs when a sudden trauma or head injury disrupts the function of the brain. TBI is commonly known as the signature wound of the Afghanistan and Iraq conflicts. TBI symptoms can appear immediately after or weeks to months following the injury. This webinar includes a discussion of typical co-morbid occurring conditions that present with mild TBI, or concussion, and the most current approaches to symptom management of the big four, i.e., sleep, cognition, headache and mood. The goal of this webinar is to enhance providers' knowledge of TBI and treatment for service members and veterans.

Today's presenter is Ms. Sherray Holland. Ms. Holland is a contractor who currently supports the Defense and Veterans Brain Injury Center, or DVBIC, as the Traumatic Brain Injury Clinical Educator at DVBIC headquarters in Rockville, Maryland. She received a (inaudible) Physicians Assistant Degree and a

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certificate in Primary Care from Howard University in Washington, D.C. in 2004. Ms. Holland is Board certified as a Physician Assistant by the National Commission of Certification of Physician Assistants and the Maryland Board of Physicians. Ms. Holland supports numerous projects within DVBIC's Education Division and the Centers of Excellence for Psychological Health and Traumatic Brain Injury including serving as the lead content developer for Brainline Military online civilian provider forces and contributions to the development of patient and provider education tools. Ms. Holland is actively involved with the American Academy of Physician Assistants and has collaborated with their staff on military family and veteran initiatives. Welcome, Ms. Holland.

Thank you, Commander Shields, and thank you, everyone, for participating today. And I'm really excited to be here. And thank you, DCoE for this opportunity. I'm on slide nine, which is the disclaimer. We want the next slide, slide ten.

So, in a nutshell today, what I'm going to cover in the webinar is some basics on TBI. I want to review the definitions of TBI, go over the common mechanism of injury that we commonly see when we're seeing patients with TBI, the Defense Department diagnostic criteria for mild, moderate, and severe and penetrating. Next I will talk about how military TBI presents in the various clinical practice settings. And the reason why I wanted to bring that up today is a lot of my civilian colleagues and friends would say well how is this relevant for me as far as military TBI and I work with civilian populations. And I want to go over some scenarios of that and how you can encounter some service members and veterans in your clinic.

Post traumatic stress disorder is one of the common co-morbidities that we see with TBI, so I'm going to compare/contrast both TBI with PTSD. And last, and most importantly, with this topic is screening and assessment methodology, is going over some of the screening and assessment methods that are commonly used in our clinics and also some of the challenges that we face when we're trying to identify patients with TBI.

So I first want to start with what is TBI. So in general TBI is a blow or jolt to the head or closed injury or a penetrating open head injury that rocks the function of the brain. But note that not all blows or jolts to the head result in a TBI. So I want to start with that definition, though it's not in the slide, but for example, if I was to reach under a table and come back up and miscalculate where I hit my head, I could have symptoms of concussion, I could see stars, I could feel a little nauseous, I could get a little lightheaded, but it doesn't necessarily mean that I had a concussion. This specific talk is going to be about concussion or mild TBI, and I want to also bring that up as well that concussion, MTBI, and mild TBI are all synonymous terms, so you might hear me say different ones throughout the discussion, but they are all the same.

So on slide 12, it designates two conditions that must be met to suspect or diagnose a concussion. The first one is a traumatic injury mechanism or event must have occurred, such as a motor vehicle crash, a fall, or training accident like combative, or maybe a bad parachute jump, or a blast. This is very important because when I used to work at Walter Reed we used to get some consults regarding patients that had brain tumors or may have had a stroke from some type of surgical complication, but it's not necessarily internal force that caused the brain injury. It's just something that happened internally. So to know and to designate the difference between a concussion or a TBI versus a non-TBI, you want to make sure that it's a traumatic event that has occurred.

The second condition that must be met is the patient must have experienced a loss of consciousness or an alteration of consciousness. Now most patients are not going to say those in those terms, but for a loss of consciousness the patient might say that they might have blacked out or were knocked out or came to. Those are just some of the common terms that are used. And alteration of consciousness,

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patients usually commonly say they were dazed, confused, saw stars, or had their bell rung. So that could bring your antennae up to say, oh, this person may have had a concussion.

So a couple other tidbits at the bottom. You know, it's obviously more difficult to determine when an injury occurred in a combat setting. So if you can imagine, if you're a service member on the battlefield, you're in a vehicle, and for instance say you're in one of these Humvee or MRAP vehicles, and you're the driver. For instance, if there was a blast that went off under your vehicle, and then all of a sudden the blast goes off and there's a lot of commotion going on and you could be trying to maneuver the vehicle or trying to save someone on the scene, so there's so much commotion that's going on that sometimes it's hard to kind of figure out well, how long did you, you know, may have had a change in your consciousness. So you want to give the patient the benefit of the doubt when they're trying to explain what happened to you, but you want to get the best story that you can get because, as the second bullet says, the patient interview is key to making the correct diagnosis, so you've got to get as much detail as you can to get a proper screen.

Again, if your patient says that they had alteration of consciousness, you want to dig in a little bit deeper with that and further investigate whether that was true AOC or not. So, for example, you have that same driver in a vehicle who states that they had this blast, the bomb that went off under their vehicle, and they felt "stunned," not necessarily means that they had a concussion, you have to ask a few more questions, and if you do that person could say, well, I didn't know what to do next, it just happened all of a sudden. So that sounds like what we call a normal psychological response to stress versus a neurological disruption of the brain.

Excuse me. This is Lieutenant Commander Shields. It appears as though we're having some issues with the Adobe Connect. Our apologies for the interruption. Please be advised that the Adobe Connect platform is experiencing some technical difficulties. We appreciate your patience as these issues are addressed, and we'll make an announcement upon resolution. Please continue with your presentation, ma'am. Sorry.

No problem.

So I'm on slide 13 if you're following with the slides.

So the specific Defense Department TBI definition is as follows. So it's the traumatically induced structural injury of physiological disruption of brain function as a result of external force to the head. So again, some kind of external force had to have hit the head to have caused a TBI.

Also, the next bullet point which is very important, is there has to be a new or worsening of at least one of the following clinical signs: loss of consciousness or decreased consciousness, a loss of memory before or after injury, and that's what we call retrograde amnesia or posttraumatic amnesia. I'll go into that a little bit later. An alteration in mental status, which, again, is confused, disoriented, perhaps some slow thinking on the scene. Neurological deficits. Patient has complained of balance difficulties, vision changes and things like that. And lastly, intracranial lesions. That's more of the moderate and severe patients that you would see, intracranial lesions.

So on slide 14, I want to go over the Glasgow Coma Scale. And the Glasgow Coma Scale is just one neurological scale that we can use to determine the conscious state of a patient. So like the next slide says, not necessarily we use this in the theater setting because it's hard to determine, get a good Glasgow Coma Scale or GCS score on a patient just with all the environmental issues that are going on, but it's commonly used in the civilian sector. So commonly for the mild TBI, 13 to 15, moderate TBI is nine to 12, and severe is three to eight, and the lowest score you can get is the three. Sometimes you'll see

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like an EC, which is eyes closed, or maybe a 3T or a 9T, which T stands for intubated, which tells you how the patient is. The Glasgow Coma Scale is a really good scale to use because you can use that to determine how that patient is progressing during their recovery or if they're regressing. So you can get (inaudible) GCS scores and see how that patient is being – how they're recovering.

The next slide is basically the bread and butter of what I used when I first started in TBI. It's the severity rating for TBI. And you'll see different variations of this chart, but it has the same information. So basically a mild TBI, again, has a GCS score of 13 to 15. Your alteration of consciousness is less than or equal to 24 hours. Loss of consciousness can be second to 30 minutes. PTA, or the posttraumatic amnesia, is less than or equal to 24 hours. And imaging, either CT or MRI, is always negative.

A moderate TBI is, again, nine to 12 for GCS score, AOC is greater than 24 hours, loss of consciousness is greater than 30 minutes but less than 24 hours, and PTA is greater than 24 hours but less than seven days, imaging can be positive or negative.

And lastly, severe, three to eight is the GCS score. AOC is, again, greater than 24 hours, like moderate. LOC is greater than or equal to 24 hours. PTA is greater than or equal to seven days. Again, positive or negative imaging.

So a good example of PTA, I always give an example of myself. I was actually, a couple years ago I was walking and crossing the street and texting on my cell phone, and I missed the curb and tripped on the curb and kind of like was flailing my arms trying to catch my balance. And the next thing I remember is thinking, oh, my goodness, I'm going to fall and it's going to be embarrassing. So the next thing that I remember is looking up and seeing a couple looking up at me. I was thinking to myself, why are they staring at me, and they said, wow, you had some fall. I remember getting myself together and picking myself up and going into the store. Well, I thought I was going in the store for a couple of things and thought I was in and out, but I got stopped by a security guard at the store, and they asked me, you know, are you okay? And I kind of said, yeah, of course I'm okay. And he said, well, you've been wandering the store for two hours with an empty shopping cart. So I had no idea that I actually had been in the store for two hours. I literally thought that I walked in at that moment. So that is a classic example of PTA when you're brain is not tracking your memory.

And then I want to point out another good point at the bottom is if you have a patient that says that they had a loss of consciousness for five minutes and they were tracking memories within that set day period, and they went to go to the emergency room and actually had a head CT that showed that they had a brain contusion, well, positive imaging, if you have a positive image, you are at least a moderate TBI. So regardless of what the patient states they had any loss of consciousness that might be in the mild realm, they are automatically a moderate TBI and bumped up. And that goes for any of their criteria. You know, if you have a patient that says that they had alteration of consciousness for greater than 24 hours but they felt like they lost consciousness for more than a day as well, then that bumps them down to severe.

Next slide.

So the next slide is a polling question. Now let's start testing. So let's get started. So Major Holland reports to your emergency room after a motorcycle accident one hour prior. A witness reports he was dazed on the scene with a GCS score of 13, which he motor (inaudible), you know, he's localizing pain, verbal is four, which means he's kind of confused conversation but talking back, and his eyes are intact. Currently he is oriented and his GCS is 15, but he reports headaches, dizziness and blurred vision. He has a small scalp laceration. Head CT is normal. At discharge, he would have a diagnosis of: (a) mild TBI,

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MTBI or concussion; (b) moderate TBI, (c) severe TBI, or (d) penetrating TBI. I'll give you folks ten seconds to (inaudible).

Okay, we're going to close the poll now and see what everyone says. Great. Correct answer is mild TBI, and the reason for that is the patient had an alteration of consciousness, obviously less than one hour because he's at the emergency room now. And he had a GCS score that improved. He was still within the mild TBI range, and he had symptoms and a small laceration but nothing that was penetrating and his CT was normal, so that makes him a mild TBI. I hope that was clear.

I'm going to go over some statistics, and just before I go into these, all of the stats that I'm going to talk about are actually found on the DVBIC website. So if you go to dvbic.org, go towards the bottom left and there's DOD numbers. So if you need any stats or want to review anything else, we have those on file. And they're updated quarterly.

So the first graph here that I want to show is the total worldwide TBI diagnoses. So as you can see, there's over 270,000 TBIs that have been diagnosed since 2000. And there's a bump in the TBI diagnosis from 2006 to 2008, and my opinion and my personal thought is it was because during that time it was the surge of the war. As you can see, from 2010 there was a spike up again in 2011, but now it's currently being dropped. And we're thinking that now that a lot more folks are being educated about TBI and how to prevent head injury, and even identifying them earlier, has caused the numbers to drop.

Now the next slide is slide 18. We're going to go over the severity ratings, so how they're broken down. So over 82% are actually mild TBI. And that's the common ones that we're going to see in a clinic. The next would be moderate, which is at 8.2%, followed by nonclassifiable. And nonclassifiable is when the provider that actually put in the diagnosis actually did not put a severity in at that time, so unfortunately we have a little over 18,000 of those. The last two would be penetrating and severe that we would see, and they're not as common.

Next slide. I'm sorry.

And the last graph that I want to go over is incidence by branch of the service. And so, as we know, Army has deployed the most service members for Operation Enduring Freedom, which is Afghanistan, and also the wars in Iraq, Operation Iraqi Freedom and Operation New Dawn. So those numbers are definitely higher than the other services. And so, as you can see, there was a drop from Army as well as the others during that time to see how the TBIs were being diagnosed there.

Next slide.

And on slide 20 is a CBC slide as civilian stats here, so at least 1.7 million TBIs occur in the U.S. every year, and we're thinking that those numbers actually double because as you see at the bottom of the pyramid, a lot of patients do not receive care for these TBIs. Of the folks that are being seen, a little over 1.3 million are in the emergency room getting the proper treatment that they need. Two hundred seventy-five thousand are hospitalized, and 52,000 actually die or succumb from their injuries.

Next slide.

So I want to go over some of the common mechanisms of injury. So on the left side you have the closed head injuries, and that's the blunt traumas. And that, for example, is explosion or blast, which is commonly seen in the combat setting or the theater setting. Motor vehicle crashes and falls. Also on that side you could add sports and training accidents.

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And on the penetrating side, the gunshot wounds, stabs, and fragments, either from shrapnel or from bone that the person has had an injury to.

Next slide.

So I want to go over some of the blast-related concussions. And as I said before, blast is the most common mechanism of injury in combat setting. And there's four mechanisms of injury of blasts. The first is primary blast, which is the atmospheric overpressure, or that blast wave, followed by an under pressure or vacuum.

The secondary blast is objects that are placed in motion, so you've got that shrapnel that's flying out from these bombs or these IEDs that come out.

The third would be tertiary, which a service member is thrown from the blast (inaudible) or the blast wave.

And (inaudible) is kind of like the miscellaneous category. It's all injuries from blasts that are not from the previous three. So those are examples of burn injuries, crush injuries, maybe inhalation of toxic fumes, or complications with preexisting conditions like diabetes or asthma from inhaling the fumes. So a lot of our service members that we see, and vets that we would see, if they're injured in a blast, they've probably been exposed to all four types or four different mechanisms. So, for example, if you take my example of the patient that was in a vehicle from initially in the beginning, you have this service member who's vehicle hit an IED, so they have hit this IED which caused the blast to go off, so that's the blast wave. The secondary blast could be the shrapnel coming from that actual bomb into the vehicle causing it to penetrate their skin causing more contaminated wounds and injuries. Tertiary blasts. Maybe they're being tossed around from the blast when the vehicle's rolled over and now there's equipment and other service members bumping into each other as they're being hit by this blast. And then quadnary (sp), if the vehicle catches fire, you have burn injuries or maybe crush injuries or things like that. So that's an example of how blast injury can occur of all different mechanisms.

Next slide, please.

Okay, so now I'm going to get into more of the civilian setting. So how is this relevant with civilians regarding military TBI? So from 2000 to now, more than 80% of TBIs actually occur in the non-deployed setting. So when I first heard this statistic, I was like, you know, really surprised, and I guess from working at Walter Reed I saw so many folks being injured from deployed injuries. But when I first heard this I was really surprised because that means that a lot of the actual TBIs are occurring here. Because of that, occasionally service members and veterans are seen in a civilian hospital and then transferred to a military treatment facility or a VA hospital. So I remember from my days at Walter Reed there would be service members that were actually seen maybe in a civilian hospital in Virginia or D.C. that were initially seen there because that was the closest hospital. So as a civilian you could be exposed to a service member initially there and then they're going to be transferred to one of the military hospitals.

Again, another scenario where you could see a military service member or vet in the civilian sector is maybe that person was injured years ago before there was a lot of talk of TBI and before there was any screening that was done, so you may be the first person that has actually seen that person about maybe a possible concussion, so you want to definitely take a good history and find out if the patient in front of you has actually served, and then from there you can find out how to better treat the patient and get a good history on them.

Also another scenario is also with a person lack of reporting their symptoms, so you could have a service member or vet in your clinic who may have thought they could just zip through and not report their

symptoms so they can get back to be deployed, but years later they might say, you know, I'm still having difficulty, and they might report to you and say that I'm still having headaches and I was injured. So that's another way that you could also see this patient as well. And because of that, the chronicity of their symptoms becomes more complex because you're not just treating a patient with a headache, you're treating a patient that maybe was exposed to a blast. And treating those headaches are more complex and more complicated if they have taken longer to be evaluated.

Next slide.

And another way that it's relevant to civilian practice is Homeland Security reported that 70% of terrorist attacks worldwide involved high explosives. So like recently we've actually encountered the Boston bombing. So it's just from the military standpoint, we have been taking care of patients that have been exposed to blasts, but also in the civilian sector there's a lot to be learned about blast exposure and how to properly manage the patient that's actually been exposed. So it's really important to get to know patients that from the military you might even see them in the civilian sector if there's a bombing on the United States.

Next slide. I'm on slide 25.

Again, veterans, you know, like I said, in your clinic, you might see – well, there's a large population of reservists and National Guard that actually were deployed for the Global War On Terrorism, so, again, you might think that you're just seeing a particular person for a specific or a general symptom, but you want to ask questions, again, whether they have served or not, to see what else is going on as well.

Next slide.

So now I want to go over some of the concussion assessments. There's some pearls. So next slide.

So to get a good TBI assessment, there need to be some domains that need to be addressed. The first is history. So you want to get a good history, such as understanding what actually occurred, how did it happen, what (inaudible) the mechanism injury, what were the acute injury characteristics, and what was the symptom course. And we'll go into detail on the next slide.

Symptoms. Break it down. What kind of symptoms were they having? Are they having any cognitive, emotional, physical symptoms? And how have they progressed? Are they improving or getting worse?

You want to get a good neurological exam, if in the primary care setting or if you want to refer to a specialist, but you want to definitely examine their (inaudible) nerves, postural stability and vision. And testing as far as their cognition, you also want to test attention, concentration and memory. And because a lot of patients have that psychological component, you want to find out how they're functioning as far as if they're having any depression, anxiety and irritability.

Next slide.

So let's talk about the interview. So to get a good patient interview, and this is what I always just tell the folks I work with, you don't want to rely on just reading questions or checklists all the time. You want to be able to carry on a conversation and build that rapport with that patient. So you want to not ask yes/no questions because you want to really nail down a good timeline on that patient. You want to find out if there's any gaps in their memory. And, again, if you have a patient that doesn't want to talk about what happened, you know, just try to get as much as you can from that patient. Try to identify what happened and see if there's any memory losses in there. And because of that you want to obtain an accurate

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chronology of symptom onset and progress. So you want to know when the symptoms – did they actually have symptoms that occurred right after the incident and how they've progressed.

Next slide.

Okay, now we're going to talk about history on slide 29.

So as far as concussion incident, you know, again, what happened. Was it a motor vehicle crash, a fall, etc. mechanism of injury. Again, motor vehicle crash. Was it head on contact? Was it acceleration, deceleration? As far as a fall, did they fall and hit the back of their head and cause a coup contracoup injury? Again, was it a blast injury, and which mechanism was that?

As far as acute injury characteristics, you want to, again, find out whether they lost consciousness or had an alteration of consciousness, any type of amnesic period. And then what symptoms were they having right afterwards. Did they have headaches, vision problems, any bleeding from their nose or ears? And was there any poly trauma or blood loss?

And, again, the symptom course. You want to see whether the symptoms immediately happened, did they improve over 24 hours spontaneously or are they having worsening of symptoms?

The next slide.

So to get a good symptom, you know, you can get as much as you can from the patient, but to really assess it from outside the interview is to use a couple of tools. And when I worked at Walter Reed we used a lot of tools. We used the Neural Behavioral Symptom Inventory, which is a 22-item check off list. And like I say, you shouldn't rely on a check list all by itself. You can use the interview and also supplement with a check list.

So it's broken down into physical symptoms, cognitive symptoms, and emotional symptoms. And it ranges from, you know, they can circle whether they have none, mild, moderate, severe, or very severe symptoms.

The other one that was good is the PTSD checklist, and that one has 17 items, and it's broken down in whether the person has had any sleep disturbances like nightmares, or having flashbacks, any avoidance issues, any emotional, are they irritable or having sleep issues, or are they having any hyper-vigilance?

So we use those two to determine sometimes, okay, are they having emotional symptoms because of the PTSD or acute stress reaction or is it more concussion? And so those were two kind of ones that we used and I found that really helpful.

Next slide.

So the neurological exam, one of the things that you want to do is do a focused cranial nerve exam. Again, check their vestibular function. And also their visual function. But, you know, you can also refer to a specialist and they can get a thorough exam. But those are just some of the common things that you want to do.

Neuro cog function. As far as you want to test that, you can do a bedside mini-mental status exam, which is usually done in theater or in ANAM test, the Automated Neuropsychological Assessment Metrics, and that is one of the tests that is done typically before they're deployed and also if they've been concussed they also take another ANAM to compare the scores whether they had any changes from their baseline functioning.

But most of the time, in my experience, we have patients that get full neuropsych batteries from the neuropsychologists. That way they can really tell if there's any domains that are having any deficits and where they can get further treatment.

And lastly, the psychological function. Again, you want to interview or use tools that were mentioned before, and you want to make sure that you're addressing whether the person is having any depression, anxiety, PTSD or suicidality. Those are very important.

So, another polling question for you. Okay. Taking a good patient history includes the following: (a) concussion incident; (b) acute injury characteristics; (c) symptom course; or (d) all of the above. And we'll close it now. See how you did. Excellent. Yes. All of the above is involved in a good patient history.

And so now we're going to go into some of the screening issues. So my experience with potential consequences of screening errors, there's false positives and false negatives. So we're going to go over false positives first.

So false positive errors occur when you're diagnosing someone with a TBI when no TBI has actually occurred. And, as I mention below, it's potentially devastating news to the patient. So they're being told that they had a concussion and they're trying to figure out what happened and what to do next. You could misattribute the symptoms to TBI. So they're saying, well, I'm having some headache and sleep difficulty, but you're saying, you know, those are related to the concussion. Well, it could not necessarily be related to that at all, they didn't have one. And then because of that you have had a focus of treatment that's incorrect, which makes the patient have longer-lasting symptoms. So this is one of the ones that we try to avoid.

And next slide goes into a little bit more detail of how those were caused, so, for example, you could mistake surprise or shock for alteration of consciousness. Again, that driver that I mentioned earlier that he was stunned, you know, not necessarily had true AOC but actually had a normal psychological response. Secondly, the provider didn't consider significant blood loss. So you could have a patient that had an injury on the scene, and lost significant blood, and had an anoxic injury. Anoxic injuries have very similar symptoms, such as memory loss, headache, and just very similar, and they have a lot of cognitive deficits and cognitive complaints, so that's another issue.

Another scenario not have considered on site sedation. So you have someone who was injured in theater, or maybe stateside they were injured, and they were given some type of sedative or narcotic, and that caused them to not remember certain periods of time, so that's another reason why you have to look at the chart and find out whether or not they were given some kind of medication on the scene.

Again, diagnosing based solely on symptom report or cognitive testing results. So you could have a patient that you were kind of questioning and then they have a symptom report of very, you know, on the NSI, again like having moderate, severe symptoms, or their test results are just showing like significant amounts of deficit all across the board, but it doesn't actually mean that they had a concussion. And, again, you're not actively establishing symptom onset. An example of that would be a patient that you had said they had a headache, but you didn't determine whether that headache occurred directly after the incident that happened or a week later. So you want to determine that symptom course as well.

Next slide.

So the opposite of that is false negative errors, and that's when you're not identifying a service member that had a TBI when one actually occurred. And I think this is actually the lesser of the – the worse of the two evils. So, in turn, you're alienating that person by kind of like explaining or brushing them off, away

their symptoms. They're like, I'm really having these headaches, and you're saying, you know, no, it's because of something – you're not sleeping properly. Potentially creating long-lasting post-concussive syndrome by missing a chance for early education and intervention. We learned that early education and intervention actually improves recovery. So you have this person that has concussion and you're thinking, no, you didn't have one, their symptoms could last a long time, they're not getting the treatment that they need.

Next slide.

So, again, some examples of those is you're not really digging in deep and asking those questions about what happened. So if that person was in a blast, and you ask, hey, did you remember that blast, and they say, yes, but you want to dig in deeper and find out whether they remember hitting their head or did they fall, because in one of those other scenarios they could have blacked out from that. Again, relying only on the checklist, you could have the opposite and have a person saying no to everything that they're actually asymptomatic. And because of that, your lack of symptoms, you're thinking that it's a lack of injury.

And another issue is if you have a person that's like that and you don't perform brain imaging, you could actually miss a greater pathology, and that presents where a patient that didn't have any symptoms, didn't complain, but you imaged them later and find out that they actually had maybe an old bleed or something on their CT. And then, again, missing the possibility of an anoxic brain injury.

Next slide. So we're on 37.

So, again, how do you prevent misdiagnosing and making sure that you get the proper diagnosis the best you can? And again, do not rely solely on screening checklists. You want to get a thorough review – or you want to perform a thorough records review, get their EMR from theater notes, from previous hospital that they've been at. You want to interview other injured service members or contact their unit, and I did that a lot at Walter Reed. Talk to their families. Find out if there's any changes in their personality. And, again, ask about previous history of TBI because the person, especially if there's a false negative, you're thinking that they might not have had a concussion, but then say, hey, did you have a concussion before and this is how you felt in the past. And you don't want to over or under diagnose based on symptoms.

Next slide.

So I want to go over the big four symptom management. And the big four that I saw was sleep, cognition, headache and mood. We're going to start talking about sleep here. So 50% of patients with TBI have some form of sleep disturbance. And that is really significant for me. And there's a study that was done that showed that veterans that had a combination of TBI, PTSD or chronic pain, 93.5% of those had a sleep disorder. And of those, 65% of those were screened positive for MTBIs. So you want to make sure that if you have a patient that complains of a sleep disorder or a sleep disturbance, you want to make sure that you identify those and get them the proper treatment, because if you don't, it could actually exacerbate other symptoms. And it can prolong concussion recovery and actually be a risk factor for suicide.

The next slide.

So how do you assess for sleep dysfunction? So you want to make sure that you find out what kind of sleep dysfunction that they're having. Are they having insomnia? Are they having the issues with sleeping throughout the day? Are they having any disturbances like nightmares, parasomnias, or are their spouses complaining about, you know, that they're snoring or having sleep apnea or periods that they're not breathing? So doing that, there's probably exam or clinical tools that can be used.

Next slide.

So from the VA and Defense Department guidance, for acute and chronic MTBI with sleep disturbances, for acute MTBI you want to educate the patient. I can't stress how much educating the patient really affects how the recovery is and how they get through a lot of their condition. You want to provide information on sleep hygiene. Make sure that they know that they need to sleep at a certain time, sleep for at least seven to eight hours a day, make sure that they're not exercising right before bedtime or drinking a lot of caffeinated drinks. Make sure that you advise them of the effects of medication, again, caffeine, tobacco and alcohol as well. And if they're having symptoms, you can prescribe a short-term sleep medication like a non-benzo, but we usually don't do that. If we do, it's for a short time, like seven days, and have them follow up.

If they have a chronic TBI, which is longer than three months, we want to make sure that we're reviewing the medications. Make sure that the medications aren't causing these symptoms.

You want to evaluate for other co-morbid psychological conditions, such as PTSD, depression, anxiety. Those can also exacerbate sleep symptoms.

Make sure that they're getting proper pain management. You know, some patients can't sleep because the pain is not controlled well. So you want to make sure that you're reviewing their meds to make sure that they're on a proper dosing.

If they're having these issues of snoring or periods of apnea, you want to conduct a sleep study. Or even if they're not, and they don't know, they're by themselves, you can refer them to a specialist to get that done as well.

And there's other different techniques or CPT that can be done to help improve the quality of their sleep.

Next slide.

So now we're going to go into more of the cognitive changes. So first we're going to talk about effective functioning, and effective functioning is really common if there is a frontal injury to the brain. So a lot of patients will have decreased awareness of thinking changes. They won't know that they're having these issues. They have problems being organized, not being full flexible. They can't plan or set goals for themselves. They have difficulty problem solving and prioritizing.

Next slide.

In thinking changes, as far as attention goes, they have reduced visual attention, so they're not really paying attention to all their surroundings. They can't concentrate. And they have an inability to divide attention between tasks. They're having trouble with multitasking.

As far as processing speed, which either they will admit or, you know, you can notice that either if they're, more on the civilian side, if they're back at school or at work, they have slow thinking and they're not reading. They have slow oral and written responses. Sometimes when testing you can find that they have a decreased processing speed as well.

Next slide.

So we're on slide 44 as far as communication. So a lot of patients have difficulty finding the right words or naming objects. This is usually found during interview or during testing. They just go on a tangent. Their communication and their speech is just disorganized.

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As far as learning and memory, information before is usually intact because they have remote memory, but they have reduced ability to remember new information, so they're having trouble tracking new memory.

Next slide.

As far as cognitive assessment, what's the best way to move forward when someone has these complaints of thinking changes? So usually we have a neuro cog assessment with a patient, and we want to make sure that that's usually done when it's appropriate for testing, so not when a person is on a lot of narcotic medications, and not when they have so much psych overlay that that's going to affect their testing as well. So it's based on the clinical judgment of the medical team, but most of the time we wait until it's appropriate.

And following that, once we find out that the assessment shows some domains of deficits, we usually refer for cog rehab, either with OT or speech.

Next slide.

So now we're going to talk about post-traumatic headache, and that's the most common symptom following concussion.

Next slide.

So the occurrence of headaches in mild TBI. This study showed that there's a prevalence of chronic headaches in returning soldiers of about 20%, which is four to five times higher than seen in U.S. population. So very common and very complex to treat. These headaches usually resemble chronic migraine and usually occur within the first week after the concussion. Most of the time it's immediately.

Next slide.

And so I want to break down and compare an acute headache versus a chronic headache. So for the acute posttraumatic headache, this headache usually develops within seven days following the TBI or after the person actually regains consciousness with the more severe injury. This headache usually resolves within three months, usually with some type of intervention.

With the chronic headache, this headache develops usually seven days following the head injury and persists greater than three months after the injury. So you want to make sure that you try to treat the headache as far in advance as possible, as soon as you identify it to get it treated.

Next slide. On 49.

So the best way to assess and what I did when I worked in the clinic was you want to know when those headaches actually began. So, you know, usually, like I said, they occur within – usually I would see the acute headaches, so usually within seven days. So you want to determine when they began, how long they're lasting, and when they do get the headache, how often are they getting those. You want to know if there's any associated symptoms. Are they having headache with nausea, light sensitivity or neck pain. What's making it better or what's making it worse. What medications were used in the past and currently.

Another thing I want to add is when you find out what medications they've used, you want to make sure that they used it properly, because a lot of my patients actually had medications that they didn't actually take because they felt like it didn't work. So they didn't give it enough chance to actually build up in their system.

You want to ask about their diet. Make sure that they're not eating certain things that could affect headaches. You want to make sure to see how they're sleeping. And also, if they had a headache history in the past, you want to know if that changed since this concussion or if it's about the same.

Next slide.

So I just list a few of the other tools that you can use to address headaches. I mean, when I worked in the clinic, we had a regular headache diary that they used and they brought in so we could see the patterns of their headaches and where they would identify what triggers occurred and other things like that and see how we could better treat them. So you could use the (inaudible), but just a regular old headache diary worked well.

Next slide.

So from a pharmacological standpoint, if you have a patient who has an acute attack, the first thing you want to do is give them acetaminophen if there's no contraindication. After 48 hours, after the risk of bleeding, you can add a nonsteroidal anti-inflammatory drug, or add a triptan like Imitrex or other medications like that. Over time you want to make sure they have some kind of prophylactic therapy, so you want something that not just helps the acute headache but also over time how can they help mitigate these headaches or decrease the frequency of these headaches, and these are just some examples of the classes of drugs that we used to give.

Next slide.

And for the non-pharm therapies, again you want to find out, you know, if you can get them from the headache diary, if there's any triggers that you notice or risk factors that cause the headache, like maybe too much caffeine, etc., you could stop that. Make sure that they are getting the proper diet, exercise, and educate them on sleep hygiene. Again, use the headache diary. That's another good way to help figure out what to do with the headache.

You can do biofeedback or stress management with the patient. Refer them to physical therapy or acupuncture. And then there was a study that I've mentioned below in the last bullet that some supplements like B₂, magnesium, etc., can be considered – I'm not really familiar, I've never used those personally, but they actually did show that there were some changes or some improvement.

Next slide.

So the last thing I want to talk about is the emotional, social changes, the (inaudible) changes that we see. And those are just some of the common symptoms and issues that we see with patients.

Next slide.

So when you have a patient that has a concussion, you know, they're going to have a lot of co-morbid issues. So you want to kind of appreciate these factors and figure out how to best treat that person. So not only are you treating a concussion, you're treating someone who's had some type of issue with either combat stress, anxiety, depression, irritability. Maybe they're not sleeping right. As far as co-morbid medical conditions, they could maybe have chronic pain that's causing them a lot of grief. And they're just trying to adjust back into the community, trying to get back into their family life and back to work and school and not be into that deployment mode and that kind of battlefield mode.

Next slide.

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So, last polling question everybody. What sign or symptom is related to posttraumatic stress disorder rather than mild TBI or concussion? A, headache. B, dizziness. C, avoidance. Or D, sensitivity to noise. I'll start the poll. Okay. I'm going to close the poll. See what we've got. 86.2% is C, avoidance. That's correct.

Okay. Next slide.

So now we're going to talk about PTSD, and I'm not going to go into detail with that, but this is just the new DSM-5 criteria for PTSD. I just wanted to put that out there because they have a more specific criteria now for that.

The next slide's very important. So this is a Venn diagram, and this is what I was trying to explain in the beginning that concussion symptoms and PTSD symptoms overlap a lot. So you might have a patient that has headaches, fatigue, insomnia, like I said, the ones in the middle. But you want to try to figure out whether those symptoms sometimes are related to concussion or PTSD. And oftentimes it's really hard to determine which one is actually causing the symptoms.

So this is just one example of how you can see the overlapping symptom. And I usually tell my patients, you know, they want – sometimes the stigma is about concussion and sometimes the stigma is about PTSD. So you want to say let's just treat the symptoms, you know, let's just refer them for concussion management and also for behavioral health.

Next slide.

[audio break] And again, the treatment of PTSD and TBI just depends on the patient, so if you have a patient that has a lot of psych overlay, it doesn't make sense to really get them involved in TBI clinic because none of that cognitive rehab is going to help or reconstruction, so they're not going to be able to focus. So I usually, you know, from my experience I refer them to behavioral health first and get that under control, and then they come back to TBI clinic. But if you have a person that has the opposite, you can refer them as needed. Bottom line is you want to tailor that treatment to that patient.

Next slide.

And I can't stress enough that rest and education is the key to success. So when you have a patient that has a concussion, and you find out by screening them and getting a good assessment that they had a concussion, the first thing you want to do is educate them. You want to educate them, you want to educate their family, their other providers, their command, and if it's pertinent or appropriate, their employees and teachers because I feel like once everyone understands what's going on, it's not that person in particular, it's their injury, (inaudible) make sure that person (inaudible) recovery. And there's actually studies that show that reassurance and making sure that the person understands that they're going to get better actually improves their recovery time.

So early intervention with TBI education has a direct affect on recovery, and actually decreases anxiety for the patient and family.

Next slide.

So in conclusion, more than 80% of TBIs that occur each year are classified as MTBI or concussion. More than 80% of all TBIs occur in the non-deployed settings. Headache is the most common symptom of concussion.

The big four, which I call sleep, headache, and mood and cognitive deficits are the common symptoms.

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Early intervention and patient education are proven to show a faster recovery time. And, again, you're not in this alone. It's important to provide management through a multidisciplinary approach. So if you don't know exactly what to do with the person, you can consult with other team members and find out how to best approach that patient.

And so I also want to bring up another tool that I used when I worked at Walter Reed was the Mild TBI pocket guide, and I believe that's one of the files that you can download on the bottom left. The Mild TBI pocket guide basically goes over everything that I talked about today. It goes over the specific definitions of TBI. It goes over just some of the common symptoms, and also symptom management sheets are in there. But it's a really good guide you can put in your pocket and walk around with and refer to when you need to assess a patient. You can order those on dvbic.org. You go to the link of education materials, and you can either download them, or you can actually have a – there's a QR code, if you have a Smartphone you can actually put it on your Smartphone.

Okay, thank you for your presentation, Ms. Holland. If you have any questions for Ms. Holland, please submit them via the Question Box.

So it's now time to answer questions from the audience. We are monitoring the Question Box and will forward questions to our presenter for response. If you have not already done so, you may submit questions via the Question Box located on the screen. We will respond to as many questions as time permits.

So the first question is just clarifying a little bit more about the GCS.

Okay. GCS, again, is the Glasgow Coma Scale, and again this is the scale that's used to determine conscious state. So it's broken down into motor, see how well the person is actually moving on the scene. Verbal, see if that person is actually conversating or there's no response. And also the eyes, whether they're spontaneously opening or there's no response as well. But it's just something that we can use as far as to determine the conscious state of someone. So, like I said before, you can get an initial GCS score on a patient on the scene, and then determine and do some serial scores to determine whether that person is getting better or getting worse. But it's really effective.

Great. Thank you. The next question. Can you repeat what PTA means again?

Sure. So PTA again is posttraumatic amnesia. And posttraumatic amnesia is the period of time where someone doesn't – that person's not tracking new memory following their incident. So, again, my scenario when I had that fall, I went from where I fell into the store and actually had no idea what was going on. I was almost on autopilot. And then finally when that security guard stopped me, it was like I just snapped out of it and then I started tracking memory, and like, oh, wow, I've been wandering around for two hours. But basically it's just the fact that that person is not tracking new memory.

And sometimes we can do – there's also a test if there's a more severe injury. I didn't talk about it too much because it's usually seen in moderate and severe, but there is a Galveston amnesia test that we can do, what we call a GOAT test. And the GOAT score actually can determine whether that person is still in PTA. Because you'll ask patients that ask you the same question, like where am I again, what happened to me, and then you can do serial GOAT scores for more severe injuries. And I hope that makes sense.

Great. Thank you. So there was a question about the statistics that you covered for the DOD and what website. So –

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Oh, yes. So the stats are actually found on www.dvbic.org. That's D – V – B – I – C. And on the bottom left of our main page you'll see something that says, worldwide numbers for DOD. And that's where you can see all of the stats that I had up, except for the CBC one, and there's actually other graphs as well.

Thank you. So then next question is, are these checklists available for download, the TBI assessment checklists?

Yes, the NSI, actually you can download that on our website as well. I'm trying to remember where I saw the NSI. If you want, you can email me and I can show you how to get that. But it's on our website though. Oh, and the PCLM, if you – I don't believe that one's on our website, but you can Google PTSD checklists, or PCLM, or PCLC, and you can download that one as well. And the MACE is not downloadable. You would have to order that through DVBIC, and go to education materials and try to order that.

And just for clarification, the MACE, which is the Military Acute Concussion Evaluation, is available to military DOD providers. So that is one question that we will ask when you are ordering the MACE.

The next question, can you speak more about false negative errors?

Yes. So false negatives, again, are when the provider actually does not diagnose someone that actually had a concussion. So that's someone that you might see and screen that you say, okay, so I'll give a good example of that. So you have someone that you're seeing in your clinic, and they may have had a motor vehicle crash. And you're asking them questions like do you remember seeing the vehicle? Tell me what happened to you. And they say they remember being in the vehicle. They remember driving, and then all of a sudden they remember being hit, maybe rear-ended. And so that's kind of when you want to ask more questions, and it's like, you know, do you remember hitting your head? Do you remember being knocked out or did you have any changes in your consciousness or anything like that, and they might say they're not sure. That's one way you can determine that person actually had – you could say from that you're not sure. You could just leave it at that and say, well, it sounds like they didn't have a concussion.

Another way, again, is if you had someone who said that they remember the blast, remember getting checked out, has all memory of all the events and you can't identify any gaps in their memory. Well, you do the symptom checklist with them and they mark none or mild, and you're thinking, oh, it can't be too much related to concussion. But that person comes back later in your clinic and you find out that they're still having symptoms of maybe headaches or dizziness. And when they come back and you rescreen them, you might do an image at that time and find out that they had maybe a contusion or something and that's on their CT. So that's some of the examples of false negatives.

All right. Thank you. So the next question, what is the connection between violent behavior and TBI? Hmm.

I know we had a webinar, it was a great webinar, on our website, actually. You can go on dvbic.org and online education, there's a webinar called The Battle Within with Dr. Cynthia Boyd, and she talked about violence and TBI. It was an excellent webinar, so you can check that out as well. But, you know, there is, you know, and it's one of those things that's hard to answer because I actually had patients who were in some issues with the legal system, and I was asked to address those because they had a concussion. But there is some correlation between violent behavior and TBI. I just don't know to what extent. But if you want to refer back to the webinar that Dr. Boyd did on our website, she goes into a lot of detail about that.

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Great. Thank you. Can you provide more information about cognitive functioning? As far as memory and attention and how that might influence your day-to-day living I guess is the question.

I'm not sure how to answer that one.

Okay. So when we talked in the webinar about executive functioning skills as far as attention and memory deficit, what would be some of the things as a provider that you would be looking for when you're asking questions about that?

Okay. Yes. Sorry I didn't understand the question at first. But more information about the cognitive functioning.

So when I used to work – I can just come from my perspective – I would ask them questions. I would actually have them do the NSI, and the questions on the NSI actually ask, you know, are you having problems with memory? Are you having trouble concentrating or difficulty with learning tasks, etc., things like that. I would go into a little bit more detail about, well, can you give me an example of how you're having memory loss. Is it short term memory? Is it remote memory? You just have to dig in a little bit deeper. It just depends on the patient you're having. If they're having trouble concentrating, you want to know exactly when they're having trouble concentrating. Or what medications are they on, you know, that could be causing the trouble with their memory as well or any cognitive function.

And executive functioning, again, a lot of patients had that complaint, just not prioritizing or not having – just having trouble with multitasking, things like that. So it's just hard to tell.

Can you explain more about sleep hygiene?

Yes. So sleep hygiene is basically you want to get the person to have proper sleep hygiene as far as you want to make sure that they are not exercising right before they go to bed. You want to make sure that they only sleep in their bed, they're not reading or eating. You want them to make sure that they're not, you know, just drinking too much caffeine. Things like that. You just want to make sure that they're maintaining just good sleep habits, I guess is another way to say it.

And then another question is, what sort of advice would you give family members regarding lessening the effects of a TBI following an injury? So what would you tell a family member, as a provider?

Repeat that?

As a provider, what sort of advice would you give family members regarding how to lessen the effects of the TBI?

Okay. From my experience when I worked, I would tell, you know, basically explain to them what a concussion is, what are the common symptoms of concussion, and that we expect full recovery of their injury. So I don't know if I went into detail of that today, but most concussions or Mild TBIs recover within days to weeks. We say within three months. Most of them spontaneously recover on their own. But the good point that you want to tell a family members is that we do expect full recovery of that head injury.

The other thing is that you want to also make sure they're not too hard on them because they will have changes, you know, cognitively, they might have trouble with memory, they might have trouble with more of their mood issues and being more irritable, so you want them to understand that it's not anything personal but that person's recovering.

Great. Thank you. Next question. What tools do neuropsychs use for cognition?

Oh, boy.

So there's a whole bunch of neurocognitive assessments, so I think – you mentioned a few. The ANAM.

The ANAM's one. There's impact testing. But there's – I know when I – I can't really answer that because I'm not a neuropsychologist, but I know when my patients would go for neuropsych batteries, it would be hours, and they have so many different tests that they use. So I can't really answer that, but if you email me, I can give you more of an answer.

Okay. And the second part of that question would be, can you expand on the OT or speech cognitive rehab? So what kind of rehab is available for cognitive deficits?

So I probably can jump on that one as a speech pathologist. So the speech pathologists and occupational therapists work pretty strongly on cognition and actually a lot of the research is now showing that the effects on cognition is not so much a memory issue as it is an attention issue. So that people with TBI, specifically MTBI, they're not able to pay attention as much so they're not having as much success coding that information and switching it into their memory. So we work – we meaning speech pathologist and then occupational therapists as well – work on improving attention skills and working on some higher-level cognitive thinking, getting that executive functioning and working to decrease the effects of the TBI and have them get better from that standpoint.

So I guess my next question (inaudible) is, what is the biggest determining factor for you personally between PTSD and TBI? Is it common for a person to have both?

Well, from my experience working, again, a lot of my patients had both. So I would do initial – I guess from the beginning, I worked in the inpatient setting, so I initially screened and evaluated them on the floors. And then at that time, you know, there's so much going on when they're coming back from either the war front or if they're coming stateside they've been injured, they've got all other rehab therapists and other appointments coming through, so I would mainly focus on the concussion part. But there's also a behavioral health team that would see them as well, and we started to figure out like what symptoms they're having, are they having more concussion symptoms or PTSD. And I noticed that a lot of my patients actually did have both concussion and PTSD, so it's really prevalent from my experience.

(Inaudible.) And actually I'm just noticing on the Chat session there is a comment about the Ranchos Los Amigos scales and the violence related to TBI. And I think a lot of times when you talk about Ranchos Los Amigos, you're probably dealing with more of a moderate to severe TBI, which is why we didn't cover it in this webinar. However, the mild – the Ranchos Los Amigos there is a stage, which is stage four, where people are less inhibited and there does tend to be some interesting behaviors at that stage. But, again, I think a lot of times you see that more in a moderate to severe patient. So just to kind of piggyback off of something off the Chat.

Yeah, and we did use Rancho scale at Walter Reed, but like I said, I focused more on the mild, and they're all eight, most of the time anyway.

Okay. And what accounts for the increased headaches for returning service members? So when it comes to TBI, what would you think would be the increase in headaches?

Hmm.

I guess I'm trying to understand the question. The headache is the most common symptom of the TBI.

Right.

Do you see it more in service members or is that just global for Mild TBI as a whole?

I believe it's the most common symptom, both civilian and the military setting. But like I said, I believe the stats said that it's four-to-five fold more with service members. So that's –

And I'm actually – I'm looking at some of these questions, and I'll probably guide people to the DVBIC website for – because a lot of these questions would be very in detail. There's been a couple of questions about neuroendocrine disorder. And, again, if you go to that www.dvbic.org, which is right on the web links, and under educational materials, there are clinical recommendations. And one of our more recent clinical recommendations is for neuroendocrine disorder. Our clinical recommendations, just to give you a quick and dirty, they are just that, quick and dirty. They are two to three pages. They're not CPGs, so they don't take five years to put together. But they are the best evidence that we have put into something that we can put into the hands of the providers. Along with that is an algorithm tool that providers can use to guide them through some decision making. So there is a recent clinical recommendation for neuroendocrine disorder.

And there is also a question about dizziness and middle ear injury, and there is a recent clinical recommendation on dizziness following MTBIs. So, again, if you go onto that DVBIC website under educational materials and look for the dizziness clinical recommendation it will take you through the clinical recommendation, an algorithm for decision making, and as well there's a patient handout that you can give to your patients.

There's been some questions about where can I find handouts and fact sheets, and I'll tell you, go again, to dvbic.org. There's a lot of fact sheets and handouts there, so we'd be happy to get them out. They are all mostly available for download. Definitely encourage download if you can. But they're also available in hard copy.

So I think we have time for a couple more questions. How do you assess for prescription painkiller misuse?

Oh, wow.

That's a tough question.

That's a tough question. I mean, I guess from my personal experience, I worked with a lot of poly trauma patients, so they were on a lot of narcotic medications just because they had so much pain. I worked with patients that not just had Mild TBI, but they had amputations and multiple fractures of the face and legs as well. So it's just, from my experience, it's really hard. But as they became outpatients, you know, we worked as an inter-D team, so you could see some of the signs or symptoms of them maybe needing medication, but then they also were followed by a pain specialist, so this pain specialist was managing their pain, or the psychiatrist was managing their pain. So it didn't actually affect me from the TBI standpoint. But I can't really answer that, but, I mean - .

So as far as headaches, is there a place where the headaches might be localized, or are they all over?

It just all so depends on the patient. So when you're doing your assessment for headaches, you want to make sure where the location of the headache is. So some folks might have their headaches localized in one particular area. Some have headaches that might radiate from one area to another. So it just depends on the patient whether or not what kind of headaches that they're having.

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There's also a question about fatigue and MTBI as far as any correlation. Can you explain how because of the sleep disorder the fatigue can correlate?

Yeah, I mean, I guess it's the same. Fatigue is another question that's on the NSI. And fatigue can also affect how a person sleeps, and you know, you have to manage that as well.

Okay, great. Are SPECT scans used in identifying TBI? Not at the MTBI level probably.

Not at the MTBI level. So there are other advanced imaging techniques like PETs and SPECTs, but they're mainly research related right now.

And I chose that question to piggyback off of that that we have a recent imaging clinical recommendation that just came out, so if you go onto that website, it'll give you a whole lot of information about what we're doing as far as imaging and how it can be used.

So let me look for another question that would be good for us to use. Do you know any resources that can be used to give a briefing at the military unit level?

We have lots of resources.

To be used at the military - . We have, just so you know, again, I'm going to tell you to put the DVBIC website as one of your favorites. It's one of mine. We have regional education coordinators that are located across the country and are also over at Launch Tool, which is in Germany. And each regional education coordinator is assigned to a region of the country, hence the name. So they are responsible for going out to the military treatment facilities and provide education briefings. So we have a whole host of websites and materials on that website. So if you are looking for somebody, the best thing to do is probably go onto the dvbic.org website. And where your region is, it will tell you who your person is and how to contact them.

Okay. There's a question about specialty with telehealth. I guess we can talk a little bit about our T2 sister facility.

Oh, yes.

Our sister organization.

Yes.

So DVBIC falls under Defenders of Excellence (sp), and another component under DCO is T2, which is Telehealth and Technology. And T2 is responsible for a lot of the applications and telehealth opportunities for patients to get seen. So we have a lot of applications as far as for PTSD. We have apps for – oh, yes, and as well I just got pointed out that if you go under Files, it's the last one, T2 Web Resource. Oh, no, that's the tutorial.

Tutorial.

Oh, I'm sorry.

So T2's web-based locator flyer is the (inaudible) it's a resource where you can go on to that system and say where you live and it'll pull up whatever resources are in your area. T2 also has a lot of apps that they've been putting out specifically for TBI and for psych health issues. So if you go to the T2 website, there's all kinds of applications that you can download.

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And one of the things I was saying, the Mild TBI pocket guide is one of their ones that they offer a QR code for you to scan for your Smartphone.

Okay. Beyond the phrase non-psychological exam, are there other validity statements a medical provider might use in their reports? So when you're writing up your examination (inaudible), what were some statements that were used to validate the TBI, I guess. I'm trying to understand the question, but I think –

Yeah, I'm not understanding.

So, hmm. Would you give specific scores of the tests that you did, or – I'm not sure what the beyond the phrase non-physiological exam, I don't know what we would use for that.

Yeah, I'm sorry.

I guess, the person who asked that question, maybe if you can clarify the question a little bit? Do we have a reference for suicide risk/TBI/sleep disorder? We have a flyer or a fact sheet that should be coming out soon that is on Mild TBI and PTSD that kind of puts them together and has that Venn diagram that Ms. Holland spoke about.

Also on the DECO website under provider tools, there's provider tools for TBI and there's provider tools for psych health. There are some great tools for treating people with TBI and treating people with PTSD, so that might be a good reference for whoever is looking for that.

See if we can find another good question. I think we have time for one more question.

Here's a good one. Going to be an interesting one. When dealing with a patient that was intoxicated at the time of injury and the CT did not show injury to the brain, how can a provider determine if the symptoms the patient is exhibiting are related to the TBI and not to alcohol withdrawal?

Oh, boy. I'm smiling and laughing because I've had patients like that that I tried screening once they were sobered up a little bit. But it's just really hard to determine – and that's one of those ones where you try to avoid the false positive or false negative. But the best that I can say is try to get the best picture that you can, maybe once that person has sobered up, because it's going to be really hard to determine whether that's related to the intoxication if they have gaps in their memory before the accident or if it's related to the concussion. That is something that I had to deal with on the floors. It's just, you know, it's one of those things that you either have to go on the side of precaution, you know, go on the side of caution and say, let's just treat him for what symptoms they're having versus letting them go and they might have had a concussion.

Okay.

Really good question.

(Inaudible.) Thank you again to our presenter, Ms. Sherray Holland. Today's presentation will be archived in the monthly webinar section of the DCoE website. To access the presentation and resources lists for this webinar, visit the dcoe.health.mil/webinars website. An edited transcript of the closed captioning will be posted to that link. An audio recording of this webinar also will be available as a downloadable podcast. To help up improve future webinars, we encourage you to complete a feedback survey. The link is available on the DCoE website.

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Again, thank you for attending today's webinar. The next DCoE webinar topic is Understanding Changes to the Posttraumatic Stress Disorder and Acute Stress Disorders Diagnosis in the DSM-5, and its scheduled for September 5, 2013, from 1:00 to 2:30 p.m. Eastern time.

Thank you again for attending, and have a great day.

Thank you.